The 2MASS Red AGN Survey

R.M. Cutri, B.O. Nelson, J.D. Kirkpatrick (IPAC/Caltech),
J.P. Huchra (Harvard/Smithsonian), P.S. Smith (U.Arizona)

The multi-band sensitivity and all-sky coverage of 2MASS make it a powerful vehicle for searching for statistically rare populations of obscured AGN. We present the initial results of a highly efficient 2MASS color-based survey that has already discovered 210 previously unknown, red AGN and QSOs. The extrapolated surface density of the 2MASS red AGN is $\sim$0.6 deg^{-2} for $K_s$$\leq$14.5 mag., and the space density of the Type 1 AGN inferred from the K_s luminosity function is at least as large as that of optical- and UV-selected QSO samples. The ratio of Type 1 AGN (Seyfert 1 and QSO) to Type 2 (Seyfert 2 and LINER) among the newly discovered objects is 2:1, similar to proportions found in X-ray and deep ISO surveys, but opposite to that found in IRAS surveys. The median redshift of the sample is $z=0.23$, and all but three have z$<$0.7. The color distribution, polarization properties and preliminary X-ray data suggest that most of the 2MASS-discovered AGN are red because of obscuration by dust in and around their nuclei. Thus, the 2MASS red AGN represent a population of objects that have remained hidden from shorter wavelength surveys and may alter significantly measures of AGN evolution, the ionization state of the universe and the AGN contribution to the infrared background.

2MASS is a joint project of the University of Massachusetts and the Infrared Processing and Analysis Center/California Institute of Technology, funded by the National Aeronautics and Space Administration and the National Science Foundation.